Welcome to the DVXi/XV KVM-Extender Family!

Thank you for purchasing an DVXi/XV KVM-Extender! We appreciate your business, and we think you'll appreciate the many ways that our DVXi/XV KVM-Extender will save you money, time, and effort.

That's because our DVXi/XV KVM-Extender is all about breaking away from the traditional model of attaching a new display to DVI graphic source. Using the DVXi/XV KVM-Extender, you can remotely locate monitor, keyboard and mouse up to 2.000m away from your CPU.

Wherever long distances are usual, e.g. airports, industrial plants, call- centres or in distributed computer centres, the DVXi/XV KVM-Extender is the best way, to solve all problems in remotely locating your console. 8 different types are available: Singlehead and Dualhead devices for PS2 keyboard/mouse and Singlehead and Dualhead devices for USB keyboard/mouse. An Audio/serial Option is also available.

Using 3.2GBit transceivers, the full 60Hz framerate is available for resolution up to 1920x1200@60Hz and at least 30Hz for all lower resolutions. The devices are either adapted for the Multimode (**DVXI-xM**) or Singlemode (**DVXI-xS**) data transfer.

This manual will tell you all about your new DVXi/XV KVM-Extender, including how to install, operate, and troubleshoot it. For an introduction to the Converter, see **Chapter 2**. The Converter product codes covered in this manual are:

For Multimode-Fibre 50/125µ or 62.5/125µ:

K464-1W: DVXi/XV-PM KVM-Extender for 1x DVI, PS2-Keyboard/Mouse
K464-2W: DVXi/XV-PM2 KVM-Extender for 1x DVI, PS2-Keyboard/Mouse
K464-1U: DVXi/XV-UM KVM-Extender for 1x DVI, PS2-Keyboard/Mouse
K464-2U: DVXi/XV-UM2 KVM-Extender for 1x DVI, PS2-Keyboard/Mouse
K464-SA: DVXi/XV-PMA KVM-Extender for 1x DVI, PS2-Keyboard/Mouse + serial/audio
K464-DA: DVXi/XV-PMA2 KVM-Extender for 2x DVI, PS2-Keyboard/Mouse + serial/audio
K464-SU: DVXi/XV-UMA KVM-Extender for 1x DVI, USB-Keyboard/Mouse + serial/audio
K464-DU: DVXi/XV-UMA2 KVM-Extender for 2x DVI, USB-Keyboard/Mouse + serial/audio

For Singlemode-Fibre 9/125µ:

K465-1W: DVXi/XV-PS KVM-Extender for 1x DVI, PS2-Keyboard/Mouse
K465-2W: DVXi/XV-PS2 KVM-Extender for 2x DVI, PS2-Keyboard/Mouse
K465-1U: DVXi/XV-US KVM-Extender for 1x DVI, USB-Keyboard/Mouse
K465-2U: DVXi/XV-US2 KVM-Extender for 2x DVI, USB-Keyboard/Mouse
K465-SA: DVXi/XV-PSA KVM-Extender for 2x DVI, USB-Keyboard/Mouse + serial/audio
K465-DA: DVXi/XV-PSA2 KVM-Extender for 2x DVI, USB-Keyboard/Mouse + serial/audio
K465-SU: DVXi/XV-USA KVM-Extender for 2x DVI, USB-Keyboard/Mouse + serial/audio
K465-DU: DVXi/XV-USA2 KVM-Extender for 2x DVI, USB-Keyboard/Mouse + serial/audio

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All trademark and trade names mentioned in this document are acknowledged to be the property of their respective owners.

Disclaimer

While every precaution has been taken in the preparation of this manual, the manufacturer assumes no responsibility for errors or omissions. Neither does the manufacturer assume any liability for damages resulting from the use of the information contained herein. The manufacturer reserves the right to change the specifications, functions, or circuitry of the product without notice.

The manufacturer cannot accept liability for damage due to misuse of the product or due to any other circumstances outside the manufacturer's control (whether environmental or installation related). The manufacturer shall not be responsible for any loss, damage, or injury arising directly, indirectly, or consequently from the use of this product.

Cautions and Notes

The following symbols are used in this guide:

CAUTION. This indicates an important operating instruction that should be followed to avoid any potential damage to hardware or property, loss of data, or personal injury.

NOTE. This indicates important information to help you make the best use of this product.

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EUROPEAN UNION DECLARATION OF CONFORMITY

This is to certify that, when installed and used according to the instructions in this manual, together with the specified cables and the maximum cable length <3m, the Units:

K464-1W, K464-2W, K464-1U, K464-2U
K464-SA, K464-DA, K464-SU, K464-DU
K465-1W, K465-2W, K465-1U, K465-2U
K465-SA, K465-DA, K465-SU, K465-DU

are shielded against the generation of radio interferences in accordance with the application of Council Directive 89/336/EEC as well as these standards:

EN 55022:	1999	Class A
EN 55024:	1999	
IEC 61000-4-2:	2001	
IEC 61000-4-3:	2001	
IEC 61000-4-4:	2001	
EN 61000-3-2	2001	
EN 61000-3-3	2002	

The device was tested in a typical configuration with PC.

CE

Oberteuringen, Thursday, March 15th, 2007

The management

This equipment has been found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Safety Precautions and Installation Guidelines

To ensure reliable and safe long-term operation, please note the following installation guidelines:

- Only use in dry, indoor environments.
- The Remote unit, Local unit and any power supplies can get warm. Do not locate them in an enclosed space without any airflow.
- Do not place a power supply directly on top of a unit.
- Do not obstruct a unit's ventilation existing holes.

To safeguard against personal injury and avoid possible damage to equipment or property, please observe the following:

- **Only use power supplies originally supplied with the product or manufacturer-approved replacements. Do not attempt to dismantle or repair any power supply. Do not use a power supply if it appears to be defective or has a damaged case.**
- **Connect all power supplies to grounded outlets. In each case, ensure that the ground connection is maintained from the outlet socket through to the power supply's AC power input.**
- **Do not attempt to modify or repair this product.**

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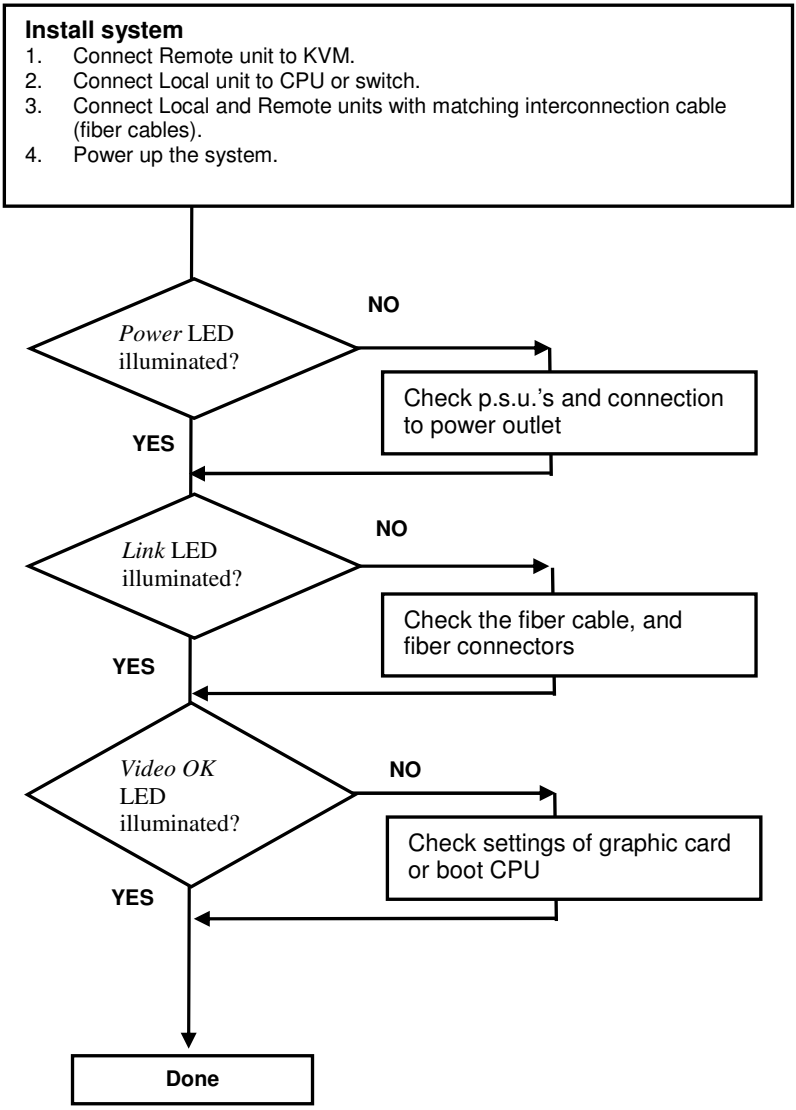
1. Quick Setup

This section briefly describes how to install your KVM extender system. Unless you are an experienced user, we recommend that you follow the full procedures described in the rest of this manual.


Install system
1. Connect Remote unit to KVM.
2. Connect Local unit to CPU or switch.
3. Connect Local and Remote units with matching interconnection cable (fiber cables).
4. Power up the system.
Power LED illuminated?
NO
Check p.s.u.'s and connection to power outlet
YES
Link LED illuminated?
NO
Check the fiber cable, and fiber connectors
YES
Video OK LED illuminated?
NO
Check settings of graphic card or boot CPU
YES
Done

2. Overview

2.1 Introduction

A fibre KVM Extender is mainly used, to extend the maximum distance between a CPU and his Keyboard / Monitor / Mouse considerably. In addition they are irrecoverable in installations in electromagnetic hazardous environments (EMI). Normal Keyboard-/ Monitor-/ Mouse extender cables (and Extender using traditional cables) cannot go so far and EMI interferences may reduce the maximum distance and/or reliability. Using a DVXi/XV Extender system, these limitations are past. Remain your CPU in a secure rack cabinet or data center while accessing from a 2.000m remotely located place.

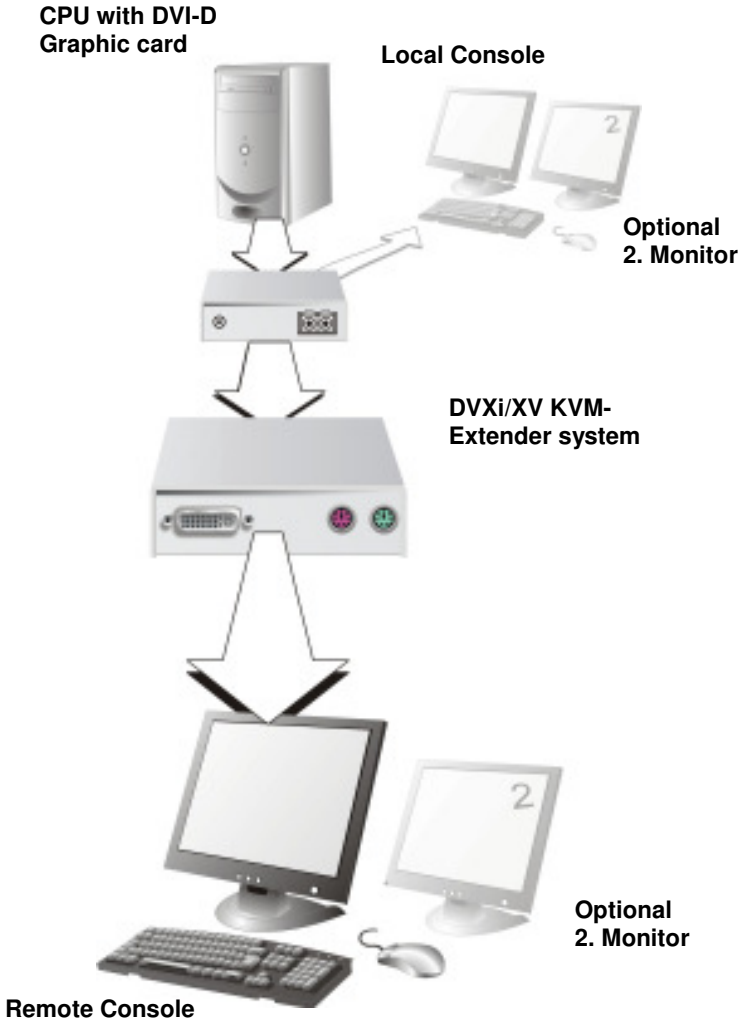
A basic KVM extension system comprises a *Local* unit (transmitter) and a *Remote* unit (receiver). The Local unit connects directly to the computer (or a KVM switch system) using the supplied cable(s). The user *console* (keyboard, mouse and monitor) attaches to the Remote unit. The Remote and Local units communicate video and data information along the interconnecting cable. Local units offer dual access, allowing the connection of a second user console close to the computer.

2.2 Glossary

The following terms are used in this guide:

fibre	Singlemode or Multimode fibre cable
Singlemode	9µ Singlemode-fibre cable
Mulitmode	62,5µ Multimode- oder 50µ Multimode-fibre cable
KVM	Keyboard, Video and Mouse.
Console	Keyboard, Mouse and Monitor
Dual Access	A system allowing connection of Local and Remote user consoles.
Singlehead	An extender system that supports one monitor + Keyboard/Mouse
Dualhead	An extender system that supports two monitors + Keyboard/Mouse
DVI	Digital Video standard, installed by ***Digital Display Working Group*** (***www.ddwg.org***) R, G, B, CLOCK in a data stream with up to 3x 1,6 Gbit/sec. Signals are TMDS Level.
PSU	The desktop power supply connected to the Local/Remote unit.
HID	Human Interface Devices are units, which are used for human access to the CPU. They are a USB-device class of its own (e.g. Memory Devices etc.). Besides of keyboard and mouse also touchscreen, light pen, fingerprint sensor, graphic tablets etc. are HID devices.

2.3 Example of a System



DVXi/XV – KVM Extender system (example)

2.4 Features

All members of the DVXi/XV - DVI KVM Extender Series offer the following features:

- Support for DVI-D Graphic cards (all devices)
- Support for PS2-Keyboard and PS2-Mouse (K464-1W, K464-2W, K465-1W and K465-2W)
- Support for USB-Keyboard and USB-Mouse (K464-1U, K464-2U, K465-1U and K465-2U)
- Support for two monitors per system (K464-2W, K464-DA,K464-2U, K464-DU, K465-2W, K465-DA, K465-2U und K465-DU)

Devices with USB- connectors support ONLY Keyboard and Mouse. It's possible, that other HID devices (Human Interface Device) like touch-screens, graphics tablets, barcode readers or similar are supported – but there is no guarantee for this! The DVI-D Cat X KVM-Extender is NOT suitable for use with other USB devices like Scanner, WEB- Cams, data sticks etc.

The device never supports more than two devices – Keyboard and Mouse or Keyboard and Touchscreen, etc. but not e.g. Keyboard, Mouse and Touchscreen simultaneously. A Hub is allowed but does not raise the number of supported devices

- Maximum resolution: DVI-D: 1920x1200@60Hz over all allowed distances
  all lower resolutions with refresh rates of at least 75Hz
- Supporting 18 Bit (= 256K colours) or 24 Bit (=16M colours) colour depth
- Using 3.2GBit transceivers, the full 60Hz frame rate is available for resolutions up to 1600x1200 @ 60Hz and at least 30Hz for all lower resolutions
- Optional support of a transparent, serial interface with up to 19.2KBaud and hardware handshake.
- Optional support of a bidirectional audio interface.
- Status indicator LEDs on each device.
- Small footprint chassis.
- Rack mount options available.
- CPU cables + Adapters included.

2.5 Product Range

There are 16 products in the range and various upgrade kits:

DVXi/ET – Extender (fibre)	
K462-1W (Multimode)	DVXi/ET-PM KVM-Extender for 1x DVI, PS2-Keyboard, PS2-Mouse (Single Head)
K462-SA (Multimode)	DVXi/ET-PMA KVM-Extender for 1x DVI, PS2-Keyboard, PS2-Mouse (Single Head) + serial/Audio
K462-2W (Multimode)	DVXi/ET-PM2 KVM-Extender for 2x DVI, PS2-Keyboard, PS2-Mouse (Dual Head)
K462-DA (Multimode)	DVXi/ET-PMA2 KVM-Extender for 2x DVI, PS2-Keyboard, PS2-Mouse (Dual Head) + serial/Audio
K462-1U (Multimode)	DVXi/ET-UM KVM-Extender for 1x DVI, USB-Keyboard, USB-Mouse (Single Head)
K462-SU (Multimode)	DVXi/ET-UMA KVM-Extender for 1x DVI, USB-Keyboard, USB-Mouse (Single Head) + serial/Audio
K462-2U (Multimode)	DVXi/ET-UMA2 KVM-Extender for 2x DVI, USB-Keyboard, USB-Mouse (Dual Head)
K462-DU (Multimode)	DVXi/ET-UMA2 KVM-Extender for 2x DVI, USB-Keyboard, USB-Mouse (Dual Head) + serial/Audio
K463-1W (Singlemode)	DVXi/ET-PS KVM-Extender for 1x DVI, PS2-Keyboard, PS2-Mouse (Single Head)
K463-SA (Singlemode)	DVXi/ET-PSA KVM-Extender for 1x DVI, PS2-Keyboard, PS2-Mouse (Single Head) + serial/Audio
K463-2W (Singlemode)	DVXi/ET-PS2 KVM-Extender for 2x DVI, PS2-Keyboard, PS2-Mouse (Dual Head)
K463-DA (Singlemode)	DVXi/ET-PSA2 KVM-Extender for 2x DVI, PS2-Keyboard, PS2-Mouse (Dual Head) + serial/Audio
K463-1U (Singlemode)	DVXi/ET-US KVM-Extender for 1x DVI, USB-Keyboard, USB-Mouse (Single Head)
K463-SU (Singlemode)	DVXi/ET-USA KVM-Extender for 1x DVI, USB-Keyboard, USB-Mouse (Single Head) + serial/Audio
K463-2U (Singlemode)	DVXi/ET-US2 KVM-Extender for 2x DVI, USB-Keyboard, USB-Mouse (Dual Head)
K463-DU (Singlemode)	DVXi/ET-USA2 KVM-Extender for 2x DVI, USB-Keyboard, USB-Mouse (Dual Head) + serial/Audio

Upgrade Kits	
455-4G	19" Rackmount- Kit to mount up to 4 Singlehead devices
455-8G	19" Rackmount- Kit to mount up to 4 Dualhead devices
455-PS	19" mountable power supply for up to three DVXI devices.
455-1K	Mounting plate to mount by screws
455-2K	Mounting plate to mount by snap on

2.6 Compatibility

Interface Compatibility

- **Digital Video (DVI-D):** Digital Video standard, installed by Digital Display Working Group (www.ddwg.org) R, G, B, CLOCK in a data stream with up to 3x1,6 Gbit/sec. Signals are TMDS Level.
- **PS/2 Keyboard:** Compatible with all standard keyboards. Certain keyboards with enhanced features may also be supported with custom firmware.
- **PS/2 Mouse:** Compatible with all standard 2-button, 3-button and wheel mice.
- **USB Keyboard:** Compatible with all standard keyboards. Certain keyboards with enhanced features may also be supported with custom firmware. Keyboards with built-in hub are also supported – but there are never more than two HDI devices supported.
- **USB Mouse:** Compatible with all standard 2-button, 3-button and wheel mice.

Devices with USB- connectors support ONLY Keyboard and Mouse. It's possible, that other HID devices (Human Interface Device) like touch-screens, graphics tablets, barcode readers or similar are supported – but there is no guarantee for this! The DVI-D Cat X KVM-Extender is NOT suitable for use with other USB devices like Scanner, WEB- Cams, data sticks etc.

The device never supports more than two devices – Keyboard and Mouse or Keyboard and Touchscreen, etc. but not e.g. Keyboard, Mouse and Touchscreen simultaneously. A Hub is allowed but does not raise the number of supported devices.

2.7 How to Use This Guide

This guide describes the installation and configuration of the DVXi/XV – Extender Series. Although the connection and operation of the system is relatively straightforward, you should consider the following before getting started:

Connection & Compatibility

If you have purchased an *Extender Kit*, this will contain all the cables required to connect the Local unit to your PC or KVM switch. Please see also: **Package Contents** (page 14)

For information about connection and installation, see Installation, page 14.

DDC Information

Normally it is not necessary to make any adjustments to the DVXi- Extender. However, in some circumstances, it may be necessary to redefine the source of DDC Information for the CPU. By default, the DVXi/LC KVM-Extender uses its own internal DDC table. If this setting does not satisfy your requirements, the DDC table can either be switched to the locally attached screen or could be downloaded from remotely located screen and stored in the internal DDC table.

To modify the DDC-Setup, see **Service Setup** (page 27).

Selecting the moment of switching to the next frame

The transmission of screen data in not synchronous to the screen change of the graphic card. Normally, the transmission is terminated during displaying a frame on the screen. If the device switches to the new frame during the displaying period of the old frame (somewhere on the screen), it's possible, that you can see horizontal screen breaks in the moment of switching (default). On the other hand the device must idle, until the actual frame is displayed completely (until VSYNC) -> the number of frames per second transmitted sinks.

To modify the switching behaviour, see **Service Setup** (page 27).

Compatibility

Devices with PS2 connectors are NOT compatible to devices with USB connectors.

3. Installation

For first-time users, we recommend that you carry out a test placement, confined to a single room, before commencing full installation. This will allow you to identify and solve any cabling problems, and experiment with the KVM extender system more conveniently.

3.1 Package Contents

You should receive the following items in your extender package (all types):

- DVXi/XV KVM-Extender- pair (Local Unit + Remote Unit)
- 2x 5V DC universal power supply for the DVXi/XV - Extender
- 2x German type power cord
- User manual (Quick Setup)

K464-1W, K464-2W, K465-1W and K465-2W (additionally):

- KVM CPU cable set (1.8m) with one side: PS/2 (6-pin mini-DIN male) keyboard and mouse connector and DVI-I video (DVI-I dual link male) connector – other side: DVI-I video (DVI-I dual link male) connector
- PS2-Keyboard-/ Mouse adapter to connect K/M to the Local Unit (keyboard can be plugged in directly, without using an adapter)

K464-1U, K464-2U, K465-1U and K465-2U (additionally):

- DVI-I (1,8m) video cable (DVI-I dual link male-to-male)
- USB (1,8m) cable (USB type A to type B)

K464-2W, K464-2U, K465-2W and K465-2U (additionally):

- DVI-I (1,8m) video cable (DVI-I dual link male-to-male)

K464-SA, K464-SU, K465-SA and K465-SU (additionally):

- Serial cable 1,8m (Serial DB9-male/female)
- 2 Audio Anschlusskabel 1,8m

K464-DA, K464-DU, K465-SA and K465-DA (additionally):

- DVI/serial/audio cable set 1,8m

If anything is missing, please contact Technical Support (see **Appendix F – Calling Technical Support**).

3.2 Interconnection Cable Requirements

To connect the Local and Remote units you will need:

- **DVI, PS2-Keyboard, PS2-Mouse:** Connect the supplied KVM CPU cable set to your CPU (KVM.- Switch, etc.). Please ensure that the connection is tension-free! Devices K464-1W, K464-2W, K465-1W + K465-2W
- **DVI, USB-Keyboard, USB-Mouse:** Connect the supplied KVM CPU cable set to your CPU (KVM.- Switch, etc.). Please ensure that the connection is tension-free! Devices K464-1U, K464-2U, K465-1U + K465-2U
- **DVI:** Connect the supplied DVI CPU cable set to your CPU (KVM.- Switch, etc.). Please ensure that the connection is tension-free! Devices K464-2W, K464-2U, K465-2W und K465-2U
- **DVI/serial/audio:** Connect the supplied DVI/serial/audio cable set to your CPU (DVI-I to DVI-I, serial DB9-male/female and audio).
- **Serial:** Connect the supplied serial cable to your CPU**.**
- **Audio:** Connect the supplied audio cable to your CPU.
- **Fibre Cables:**
    - **Multimode:** Two fibres 50µm or 62.5µm. E.g. I-V(ZN)H 2G50 (In house patch cable)or I-V(ZN)HH 2G62,5 (In house Breakout cable) or I/AD(ZN)H 4G50 (in house OR outdoor Breakout cable, stress resistant) or A/DQ(ZN)B2Y 4G62,5 (outdoor cable, stress resistant with protection against animal biting) All notations acc. VDE specification.
    - **Singlemode:** Two fibres 9µm. E.g. I-V (ZN)H 2E9 (In house patch cable) or I-V(ZN)HH 2E9 (In house Breakout cable) or I/AD(ZN)H 4E9 (in house OR outdoor Breakout cable, stress resistant) or A/DQ(ZN)B2Y 4G9 (outdoor cable, stress resistant with protection against animal biting) All notations acc. VDE specification.

A point to point connection is required. Having one or more patch panels in the line is possible and allowed. Not allowed is a connection from the fibre link interface to any other products, especially telecommunications or network equipment.

- **Power Supply**

  Connect the supplied 5V/DC power supplies to the ***Plug*** terminal on the rear of both Local and Remote units.

3.3 System Setup

To install your DVXi/XV – Extender system:

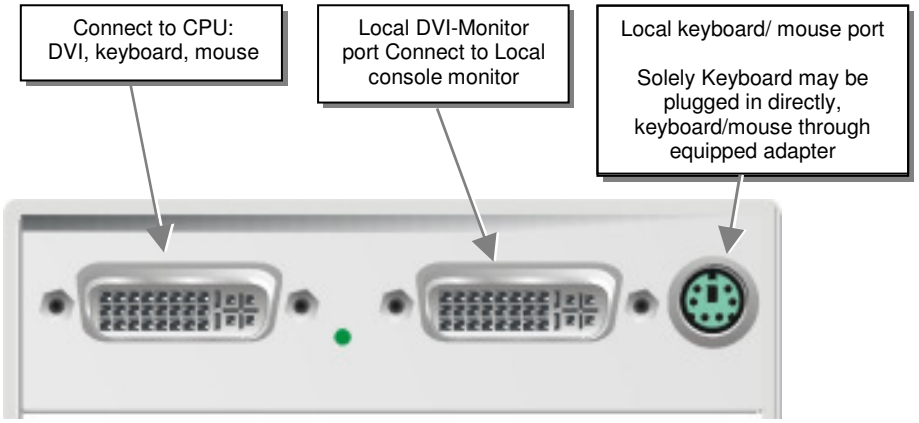
1. Switch off all devices.
2. Connect your keyboard, monitor(s) and mouse to the Remote unit (depending on device type). Please ensure, to not swap Mouse- and Keyboard connector. The (PS2-) Keyboard connector is purple and the (PS2-) Mouse connector is green.
3. Using the supplied CPU KVM cable(s), connect the keyboard, monitor(s) and mouse connectors on the computer (or KVM switch). Please ensure, to not swap Mouse- and Keyboard connector. The Keyboard connector is purple and the Mouse connector is green.
4. Connect the interconnect cable (fibre cable) to the local and the remote unit.
5. Connect the 5V power supply to power the unit.

Only use the power supply originally supplied with this equipment or a manufacturer-approved replacement.

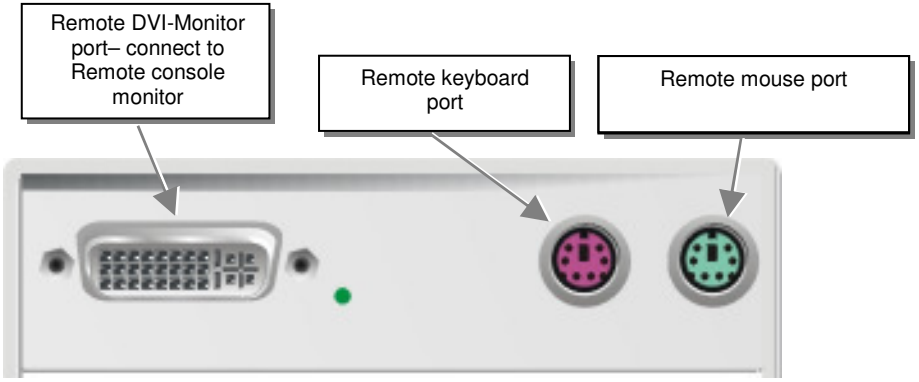
6. For a dual access system, connect the monitor for the Local console to the appropriate port on the Local unit. The port may also be used to feed into a KVM switch.

   To the local (PS2-) Keyboard-/ Mouse port you can attach a Keyboard directly or Mouse/ Keyboard together, using the delivered adapter.

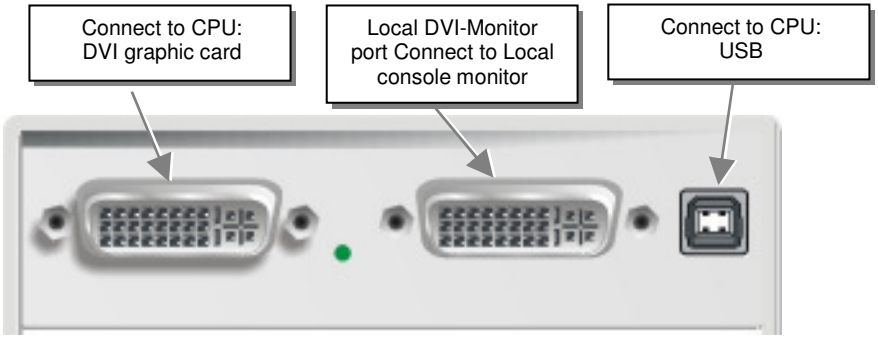
   To attach a local (USB-) Keyboard/Mouse, please use additional USB port(s) at your CPU or use a USB Hub inbetween CPU and local unit's USB connector.
7. Power up the system.


Connect to CPU:
DVI, keyboard, mouse
Local DVI-Monitor port Connect to Local console monitor
Local keyboard/ mouse port
Solely Keyboard may be plugged in directly, keyboard/mouse through equipped adapter

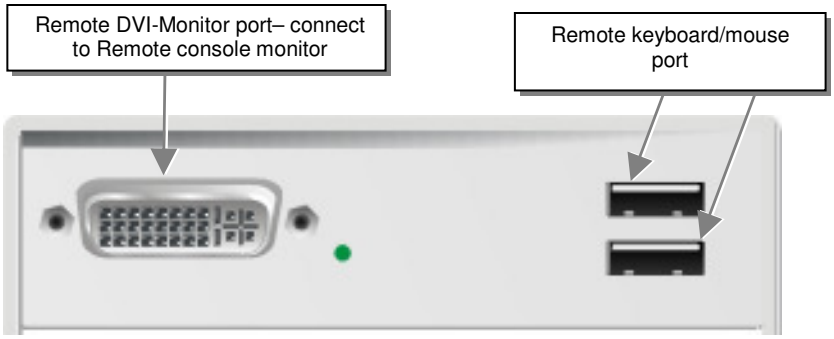
DVXi/XV KVM-Extender K464-1W and K465-1W Local Unit



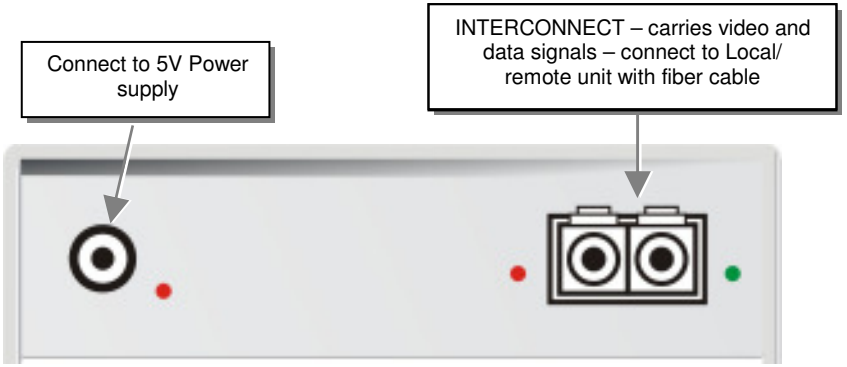
DVXi/XV KVM-Extender Type K464-1W and K465-1W Remote Unit



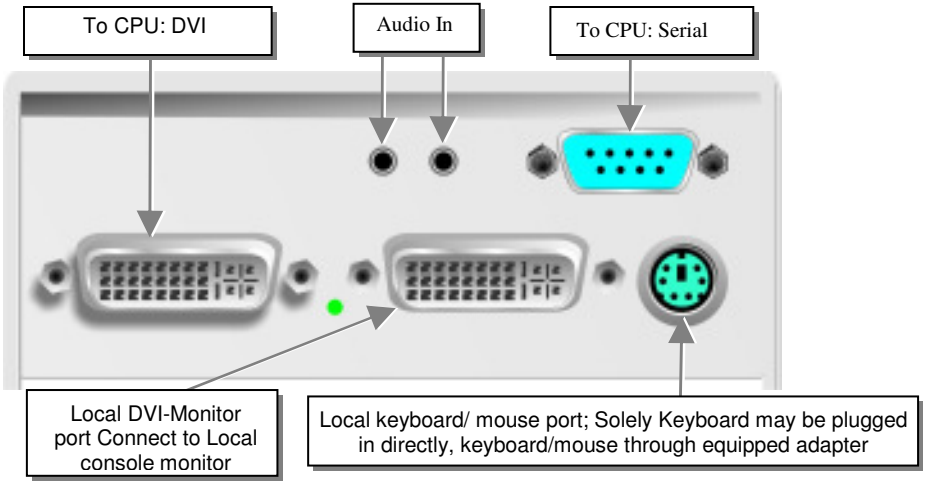
DVXi/XV KVM-Extender Type K464-1U and K465-1U Local Unit



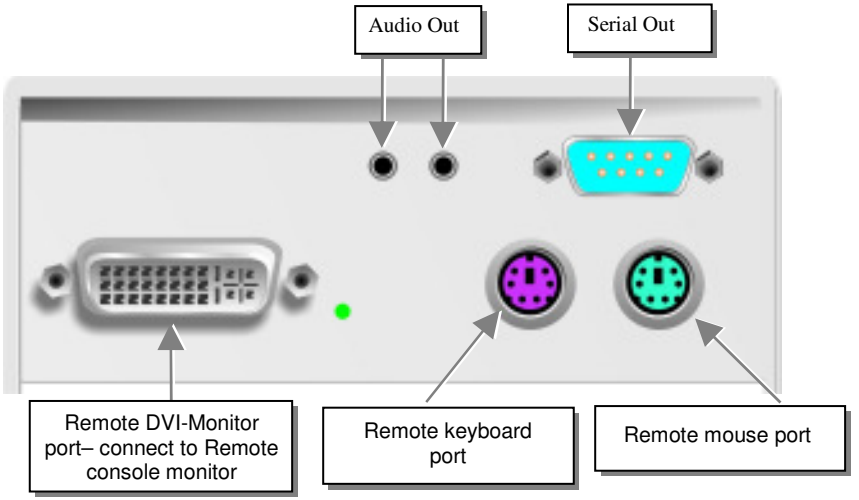
DVXi/XV KVM-Extender Type K464-1U and K465-1U Remote Unit



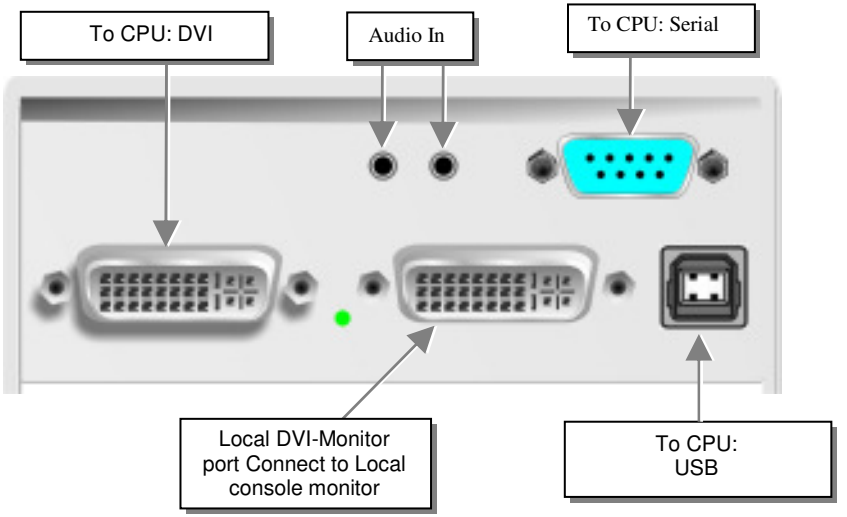
DVXi/XV KVM-Extender Type K464-1W, K464-1U, K465-1W, K465-1U Local/ Remote Unit


To CPU: DVI
Audio In
To CPU: Serial
Local DVI-Monitor port Connect to Local console monitor
Local keyboard/ mouse port; Solely Keyboard may be plugged in directly, keyboard/mouse through equipped adapter

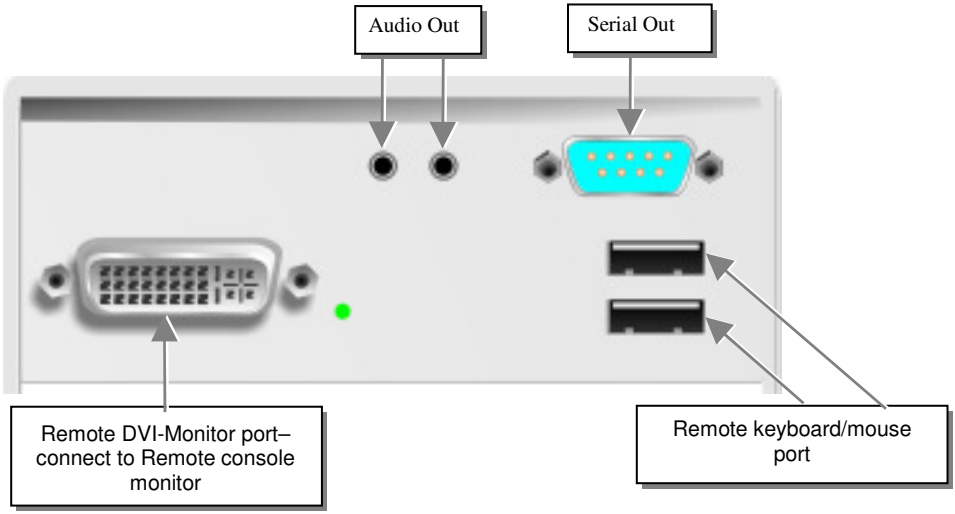
DVXi/XV KVM-Extender Type K464-SA and K465-SA Local Unit



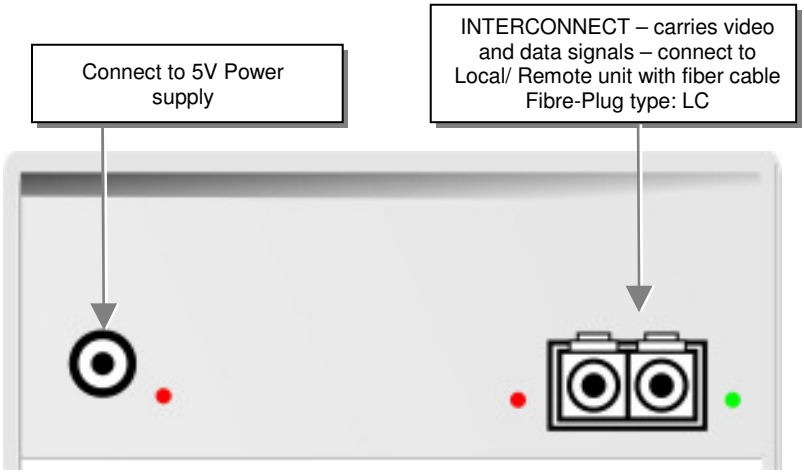
DVXi/XV KVM-Extender Type K464-SA and K465-SA Remote Unit



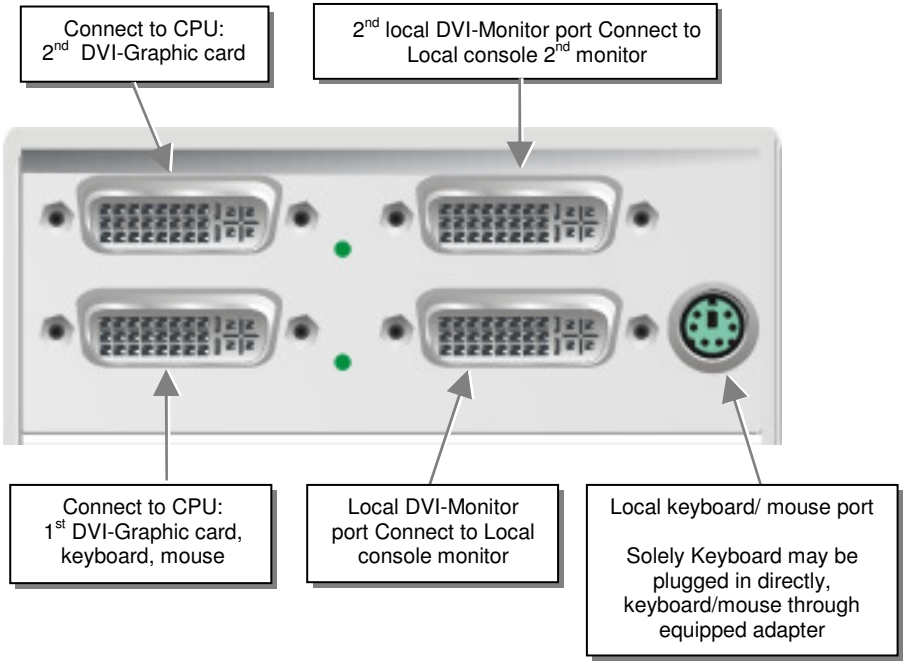
DVXi/XV KVM-Extender Type K464-SU and K465-SU Local Unit



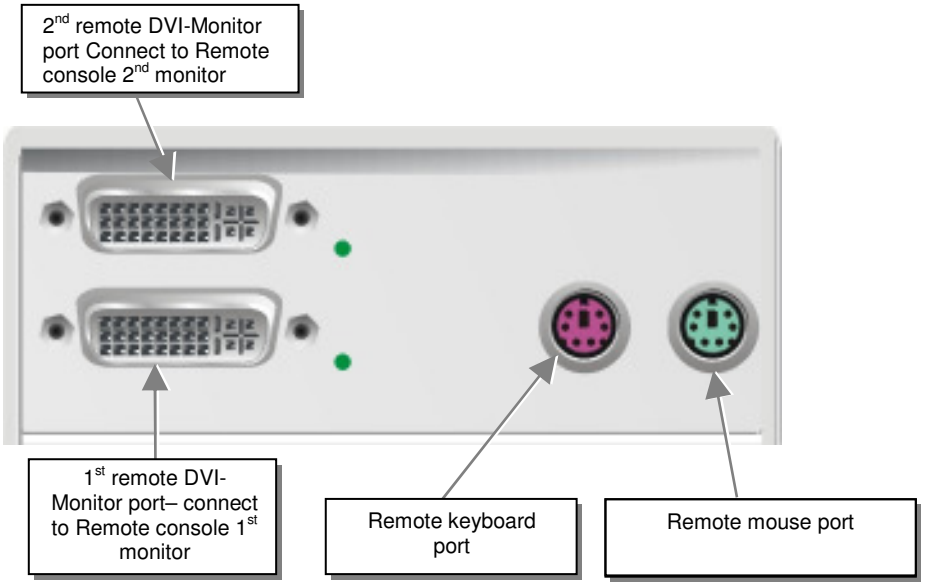
DVXi/XV KVM-Extender Typ K464-SU and K465 SU Remote Unit


Connect to 5V Power supply
INTERCONNECT – carries video and data signals – connect to Local/ Remote unit with fiber cable Fibre-Plug type: LC

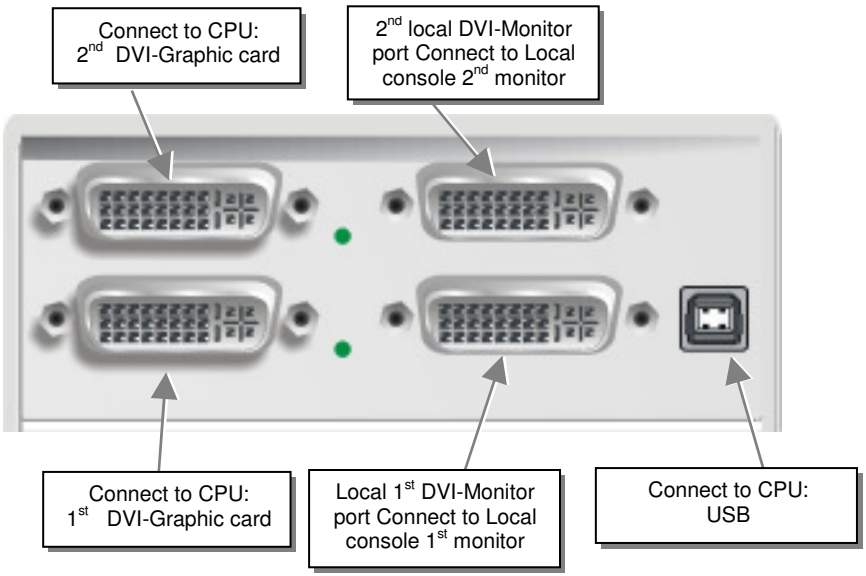
DVXi/XV KVM-Extender Type K464-SA, K465-SA K464-SU and K465-SU Local/ Remote Unit


Connect to CPU: 2nd DVI-Graphic card
2nd local DVI-Monitor port Connect to Local console 2nd monitor
Connect to CPU: 1st DVI-Graphic card, keyboard, mouse
Local DVI-Monitor port Connect to Local console monitor
Local keyboard/ mouse port
Solely Keyboard may be plugged in directly, keyboard/mouse through equipped adapter

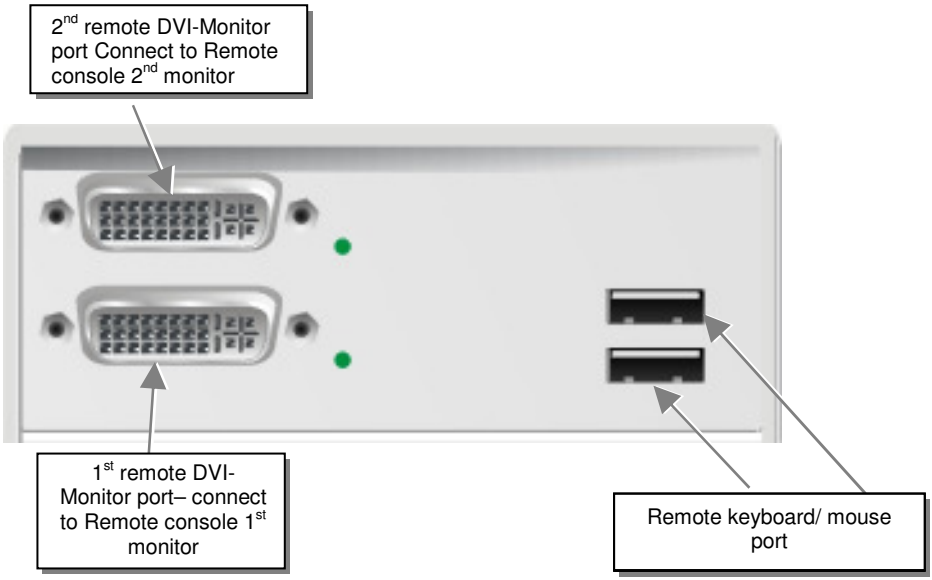
DVXi/XV KVM-Extender Type K464-2W and K465-2W Local Unit


2nd remote DVI-Monitor port Connect to Remote console 2nd monitor
1st remote DVI-Monitor port– connect to Remote console 1st monitor
Remote keyboard port
Remote mouse port

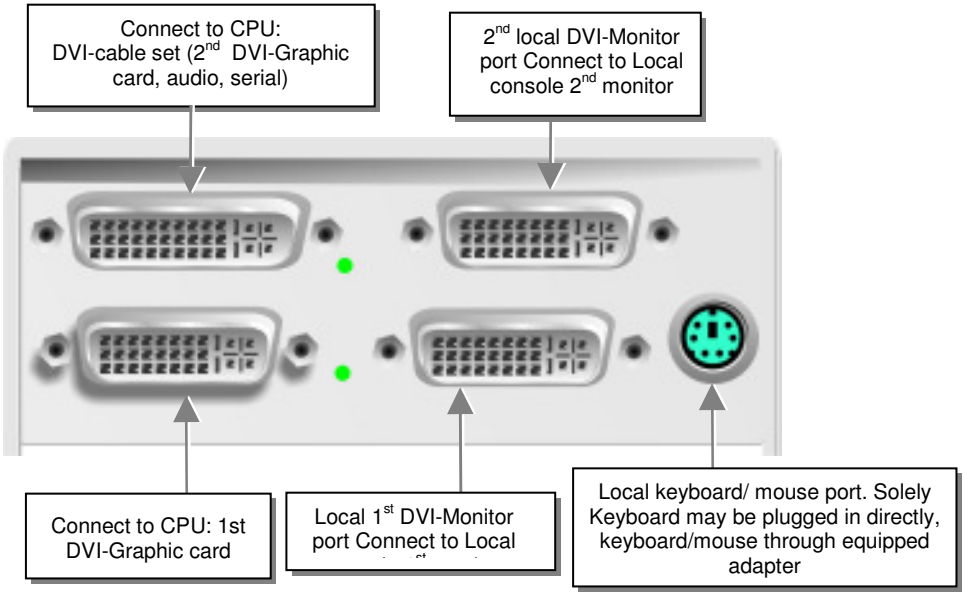
DVXi/XV KVM-Extender Type K464-2W and K465-2W Remote Unit


Connect to CPU:
2nd DVI-Graphic card
2nd local DVI-Monitor port Connect to Local console 2nd monitor
Connect to CPU:
1st DVI-Graphic card
Local 1st DVI-Monitor port Connect to Local console 1st monitor
Connect to CPU:
USB

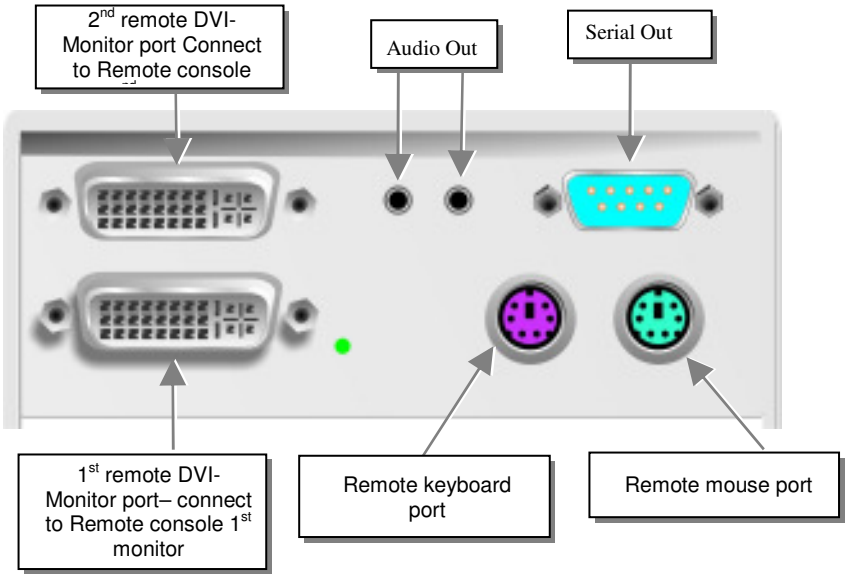
DVXi/XV KVM-Extender Type K464-2U and K465-2U Local Unit


2nd remote DVI-Monitor port Connect to Remote console 2nd monitor
1st remote DVI-Monitor port– connect to Remote console 1st monitor
Remote keyboard/ mouse port

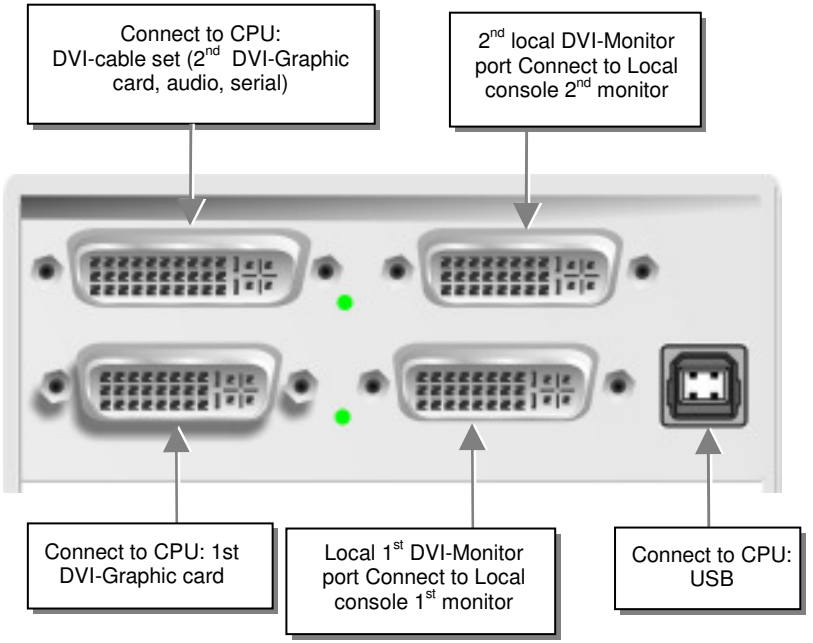
DVXi/XV KVM-Extender Type K464-2U and K465-2U Remote Unit


Connect to CPU:
DVI-cable set (2nd DVI-Graphic card, audio, serial)
2nd local DVI-Monitor port Connect to Local console 2nd monitor
Connect to CPU: 1st DVI-Graphic card
Local 1st DVI-Monitor port Connect to Local
Local keyboard/ mouse port. Solely Keyboard may be plugged in directly, keyboard/mouse through equipped adapter

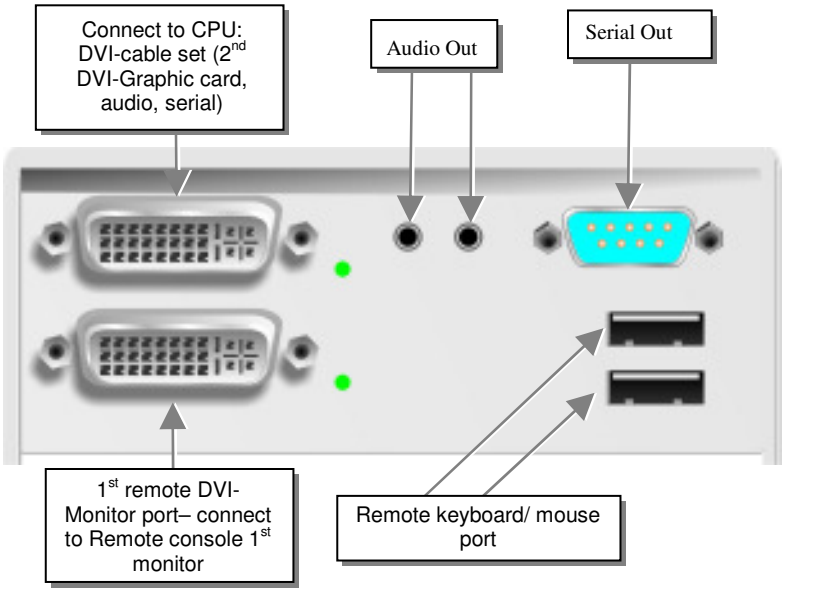
DVXi/XV KVM-Extender Type K464-DA and K465-DA Local Unit


2nd remote DVI-Monitor port Connect to Remote console
Audio Out
Serial Out
1st remote DVI-Monitor port– connect to Remote console 1st monitor
Remote keyboard port
Remote mouse port

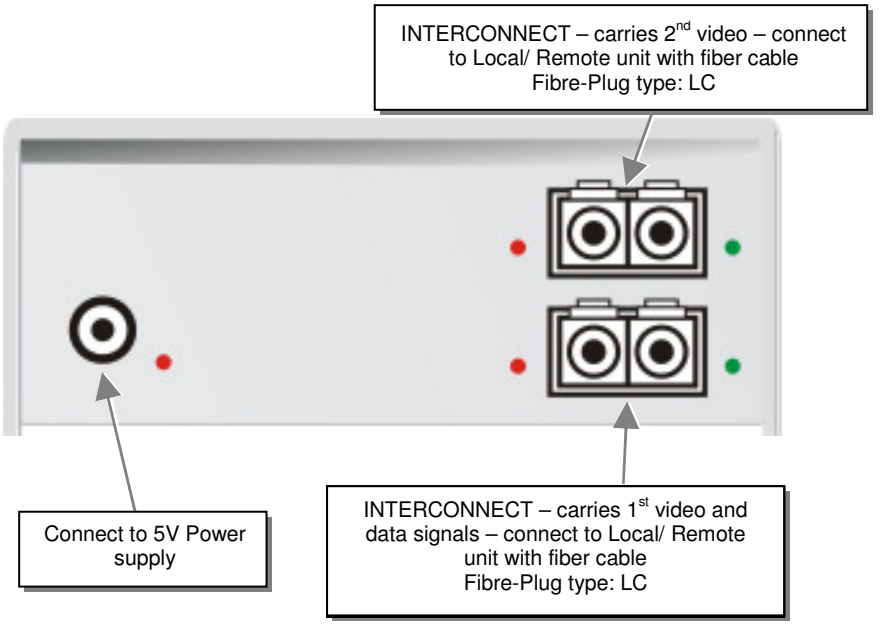
DVXi/XV KVM-Extender Type K464-DA and K465-DA Remote Unit


Connect to CPU:
DVI-cable set (2nd DVI-Graphic card, audio, serial)
2nd local DVI-Monitor port Connect to Local console 2nd monitor
Connect to CPU: 1st DVI-Graphic card
Local 1st DVI-Monitor port Connect to Local console 1st monitor
Connect to CPU: USB

DVXi/XV KVM-Extender Type K464-DU and K465-DU Local Unit


Connect to CPU:
DVI-cable set (2nd DVI-Graphic card, audio, serial)
Audio Out
Serial Out
1st remote DVI-Monitor port– connect to Remote console 1st monitor
Remote keyboard/ mouse port

DVXi/XV KVM-Extender Type K464-DU and K465-DU Remote Unit

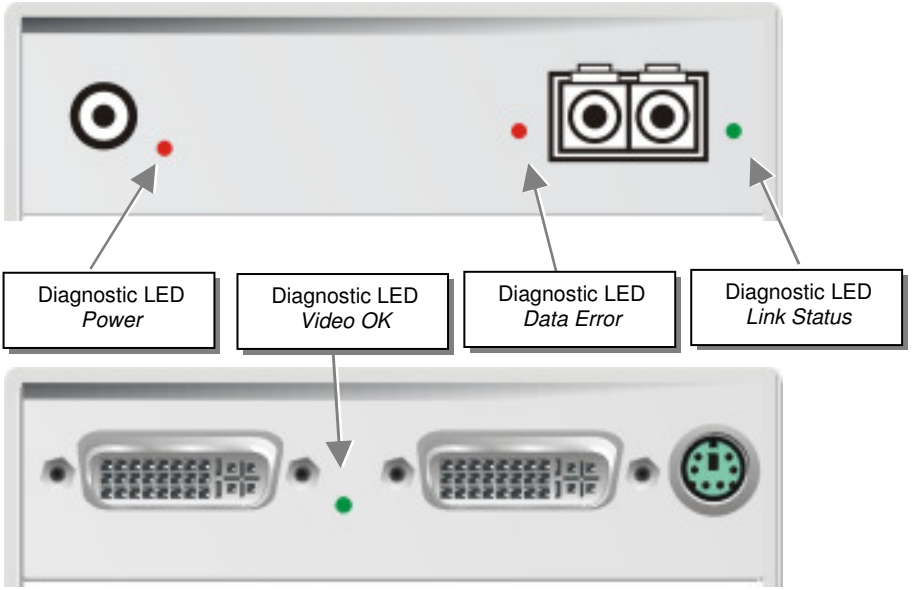

INTERCONNECT – carries 2nd video – connect to Local/ Remote unit with fiber cable
Fibre-Plug type: LC
Connect to 5V Power supply
INTERCONNECT – carries 1st video and data signals – connect to Local/ Remote unit with fiber cable
Fibre-Plug type: LC

DVXi/XV KVM-Extender Type K464-2W, K464-2U, K464-DA, K464-DU, K465-2W, K465-2U, K465-DA and K465-DU Local/ Remote Unit

3.4 Diagnostic LEDs

Each DVXi/XV KVM-Extender is fitted with four indicator LEDs: *Power, Video OK, Data Error, Link Status*: The *Power* LEDs are next to the Power socket.

The location of the LEDs is shown below:



Diagnostic - LEDs at DVXi/XV - Extender

LED	*Appearance*	*Diagnostics*
Power LED (Red LED)	Off On	Device not ready Device ready
Video Okay (Green LED)	Off On	No or invalid video signal detected Device ready
Link Status (Green LED)	blinking On	No fibre connection Device ready
Data Error (Red LED)	Off blinking / On	Device ready Errors through data transmission over fibre Cable (Cable too long, too high attenuation or too much EMI interferences)

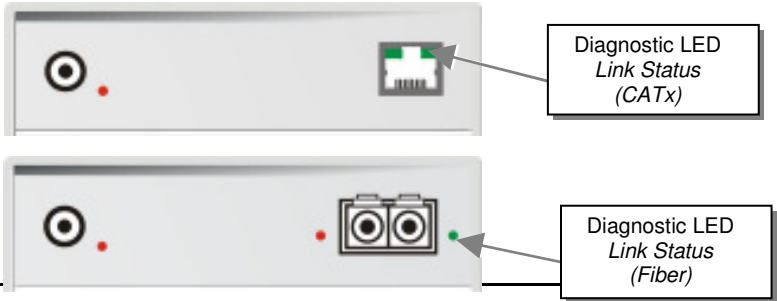
4. Service Setup

For most applications, you shouldn't need not to make any adjustments to set up your DVXi/ET KVM -Extender. Under some special circumstances it could be necessary to setup configuration specials.

For some applications, you may need to open the Local Unit and/or the Remote Unit. Unscrew the Philips-type screws at both sides at the bottom of the device. Unscrew the UNC type screws at both sides of the monitor connectors. Carefully displace the lower and upper shells of the case.

The diagnostice LED ‘Video OK’ is located at the local unit between the both DVI connectors

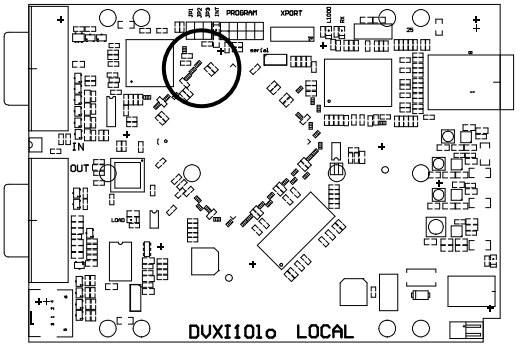
The diagnostice LED ‘Video OK’ is located near to the CATx- /fiber connectors



4.1 Setup at the Local Unit

After unscrewing and opening the upper shell, please place the device in this orientation: with the CATx/fiber connectors to the right and the electrical connectors to the left.

The main PCB then will look like this:



Use the diagram to locate jumpers.

DDC

You can select, whether the DDC is taken from internal DDC table or from local monitor or the DDC information could be downloaded from remote monitor and stored into internal table.

DDC	JP1	JP2
From internal Table (default)		
From local Monitor		
Loading the DDC Information from the Remote Monitor into the internal DDC Table (see also below: Loading the DDC Information from the Remote Monitor into the internal DDC Table)		
Reset of the internal DDC Table to Default-Values (see also below: Reset of the internal DDC Table to Default-Values)		

Loading the DDC Information from the Remote Monitor into the internal DDC Table

To load the DDC Information from the Remote Monitor into the internal DDC Table, please proceed the following steps:

- Switch off the Local Unit and the Remote Unit, unplug the Video-Cable to the Remote Monitor (Dualhead devices: BOTH Monitors!)
- Open the Local Unit like described above
- Unplug Jumper JP3 and plug it to Position JP2 (Please bear in mind the position of JP3. Note: both – JP1 and JP2 are plugged now - Dualhead devices: jumper setting on BOTH PCB's!)
- Switch on the Local and Remote Unit (Please ensure, the interconnect cable – CATx or fiber is connected - Dualhead devices: BOTH interconnect cables!)
- Wait until the LINK-LED is illuminated (see above)
- Plug the Video-Cable of the Remote Monitor into the remote unit (switch on the Monitor if swiched off - Dualhead devices: BOTH Monitors!))
- The DDC Information of the Remote Monitors is read automatically, transfered to the Local Unit and stored into the DDC-EPROM
- After a successful programming of the DDC EPROM, the ‚Video-OK' LED at the Local Unit is blinking rapidly for approx. 1 second
- Switch off the Local Unit and the Remote Unit
- Unplug Jumper JP2 and plug it back to Position JP3 as kept in mind (Dualhead devices: jumper setting on BOTH PCB's!)
- Close the Local Unit like described above
- Switch on the Local Unit and the Remote Unit
- Done

Reset of the internal DDC Table to Default-Values

If you have loaded several DDC Configurations and got no satisfying result, you can restore the original (default) DDC Table. To do this, please proceed the followin steps:

- Switch off the Local Unit
- Open the Local Unit like described above
- Unplug Jumper JP1 (Jumpers JP1 and JP2 are now open - Dualhead devices: jumper setting on BOTH PCB's!)
- Switch on the Local Unit
- After a successful reprogramming of the DDC EPROM, the ‚Video-OK' LED at the Local Unit is blinking rapidly for approx. 1 second
- Switch off the Local Unit
- Replug Jumper JP1 (Dualhead devices: jumper setting on BOTH PCB's!)
- Close the Local Unit like described above
- Switch on the Local Unit
- Done

Selection of Color depth

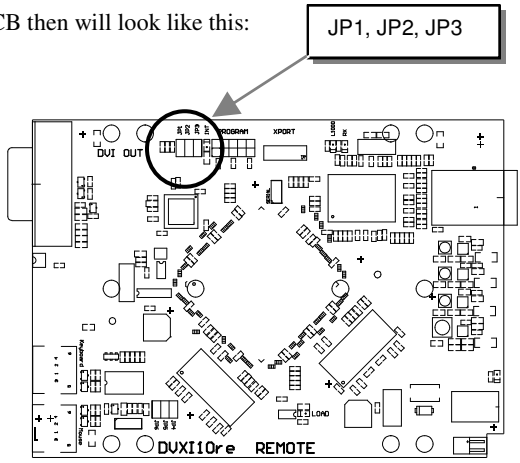
Using the devices of the /ET family, you can select, whether 18Bit colors (=256K colors) are transmitted or 24Bit (=16M colors). Low color depth enhances the count of frames, transmitted per second, high color depth gives smooth color grades. Please select to you choice the better mode.

Color depth	JP3
18Bit (defauolt)	
24Bit	

4.2 Setup at the Remote Unit

After unscrewing and opening the upper shell, please place the device in this orientation: with the CATx connectors to the right and the electrical connectors to the left.

The main PCB then will look like this:



Use the diagram to locate jumpers.

Selecting the moment of switching to the next frame

The transmission of screen data in not synchronous to the screen change of the graphic card. Normally, the transmission is terminated during displaying a frame on the screen. If the device switches to the new frame during the displaying period of the old frame (somewhere on the screen), it's possible, that you can see horizontal screen breaks in the moment of switching. On the other hand the device must idle, until the actual frame is displayed completely (until VSYNC) -> the number of frames per second transmitted sinks.

Moment to switch	JP3	behaviour
Switching during HSYNC (default)		Higher framerate but (possibly) horizontal breaks detectable
Switching during VSYNC		Lower framerate no horizontal breaks detectable but (possibly) stepping pictures

5. Troubleshooting

Monitor

There isn't a picture.

Check the power supply connection at the Local and Remote unit. Is the *Power* (Red LED) at the Local and Remote unit illuminated? If not, the internal power-supply may be damaged or there may be an internal error.

Check that the Interconnection cable is connected at the Local Unit and the Remote Unit. Is the *Link Status* LED illuminated? If not, there may be a problem with the Interconnection cable:

Are there Errors through data transmission over fibre Cable (Cable too long, too high attenuation or too much EMI interferences)? Is the *Data Error* LED illuminated or blinking? If yes, check cable length and environment.

Video Okay LED is dark: CPU does not provide a video signal – Check settings of the graphic card. Try out, connecting a monitor to the local output, to see, whether there is a signal or not.

Keyboard

The PC boots fine with no error messages but the keyboard does not work at all

Wrong cable plugged in, keyboard and mouse cables reversed.

Try a different model of keyboard. If the new keyboard works then original one may be incompatible

Check that the Interconnection cable is connected at the Local Unit and the Remote Unit. Is the *Link Status* LED illuminated?

The other console is active. Gain control by any keyboard action or by pressing left and right mouse buttons simultaneously.

PS2-Mouse

A mouse cursor appears on the screen, but the mouse does not work

Wrong cable plugged in, keyboard and mouse cables reversed.

Try a different model of mouse

You have connected the Local unit while the CPU was running. Therefore you have connected first the keyboard cable and then the mouse cable. Disconnect the keyboard cable and connect it again. Please reboot you CPU if the mouse is still not running.

The system does not detect a PS/2 mouse, or the application cannot find the mouse.

Wrong cable plugged in, keyboard and mouse cables reversed.

Ensure that the Local Unit is connected to the PC keyboard port to provide power.

You have plugged keyboard and mouse cable to the CPU ports while the CPU was powered. There you first have plugged the Keybord cable, then the Mouse cable. Please unplug and replug the keyboard cable. If the mouse still does not work, please reboot the CPU: The K/M sub electronics are powered by the CPU keyboard port. If you first plug in the keyboard cable, the circuit tries to find a mouse port. If it fails, it disables the mouse functionality.

USB-Keyboard/USB-Mouse

Your USB-keyboard/USB-mouse does not work

Although we tried to design the devices as transparent as possible, we can't ensure that all devices are running. Please check on page 43 the list of the tested devices.

USB-HID device

Your USB-HID device does not work

Although our interface supports HID devices, we can't ensure that every connected device is running. In case of a malfunction please contact our technical support.

Other USB-devices

Your USB- device does not work

You have connected a non-HID device. There are supported HID devices only. All other devices are dismissed

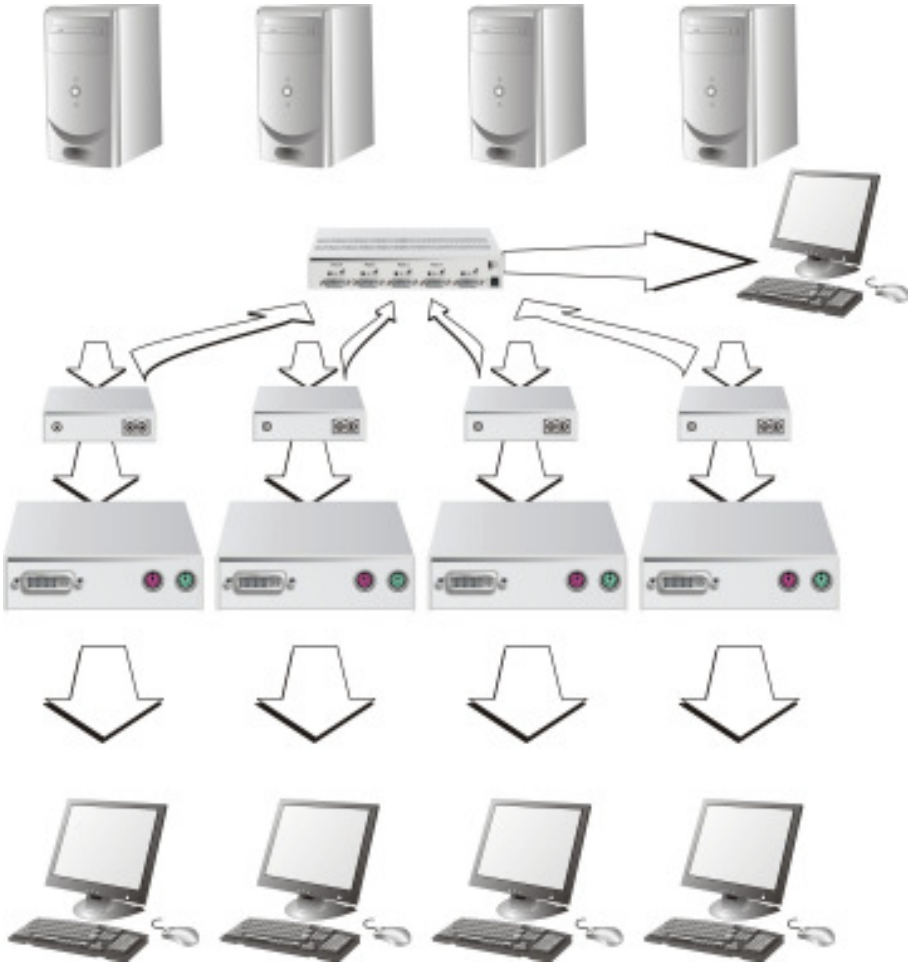
Appendix A: Example Applications

This section illustrates some specific applications using the DVXi/XV - Extenders:

DVXi/XV KVM-Extender with optional, secondary screen.

DVXi/XV KVM-Extender with optional, secondary screen

- 4 CPU's – local outputs managed through a KVM- Switch and a single console. Remote Consoles up to 2.000m away.



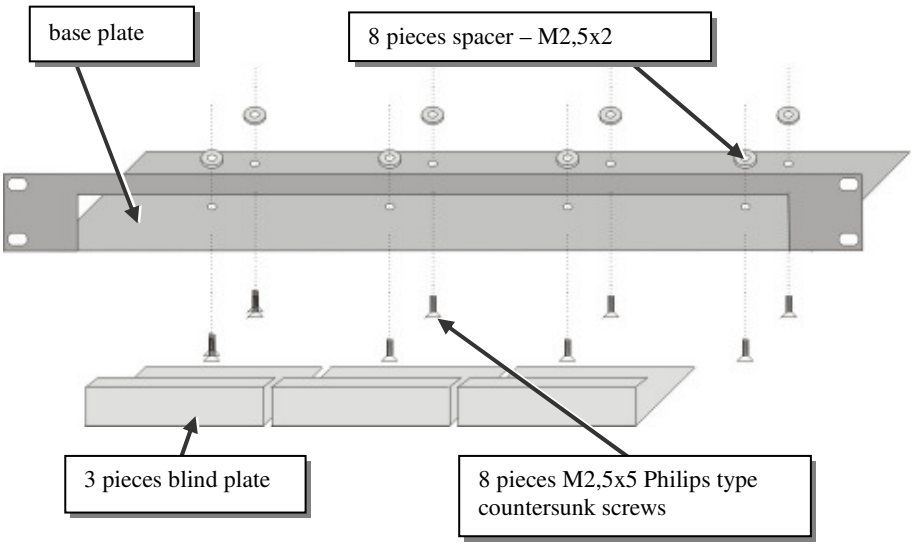
DVXi/XV KVM-Extender – local Consoles through a KVM- Switch

Appendix B: Rack Mount Options

Mounting Instruction Rackmount-Kit 455-4G

Using the Rackmount-Kit 455-4G, up to 4 devices of the device size 103x143x29mm (Singlehead Devices) can be mounted into a 19“-Server Rack. The Rackmount Kit requires 1U Rackspace. Blindplates (in the list of parts delivered) allow to cover unused device positions.

Rackmount-Kit 455-4G – List of parts delivered:



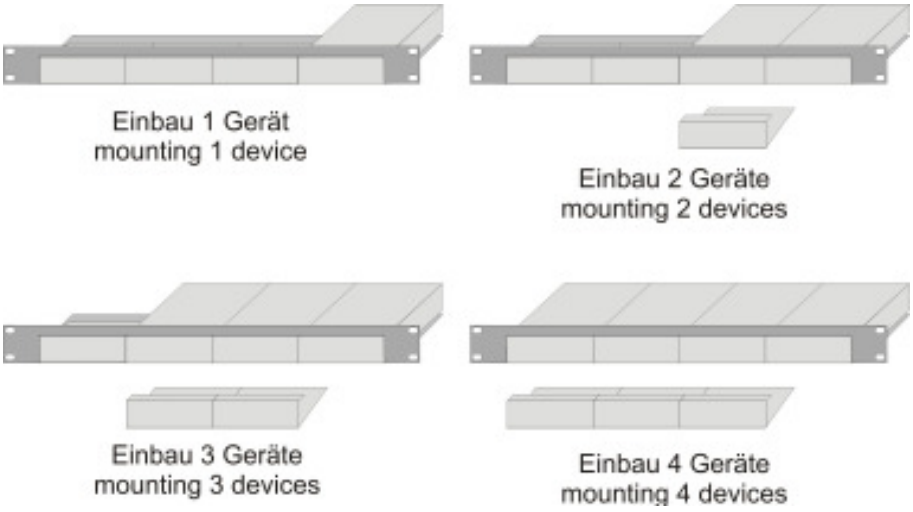
Mounting instruction:

- Align the holes on the base plate with the vacant screw holes on the base of the device.
- Fasten the base of the unit to the plate of the mounting kit

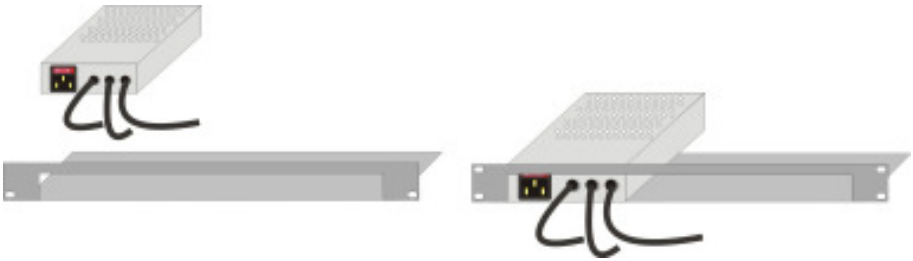
Only use the supplied, short screws, to prevent damages on the PCB’s

- Close the remaining gaps with blanking plates.

The Rackmount-Kit 455-4G allows, to mount a different count of devices (1…4 pieces):



In the mostleft position you can mount a rack mountable p.s.u. type 455-PS instead of a regular device. This p.s.u. is capable to power up to three devices.

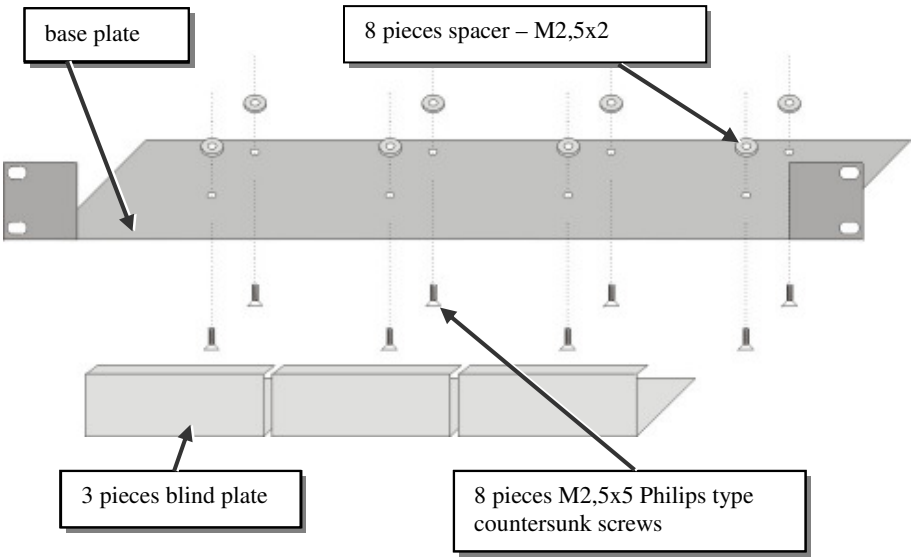


Please note:'
- Use the back moved mounting holes to fix the p.s.u.
- After mounting the p.s.u., the circuit break switch is not longer easily accessable – it is covered by the cover strip.

Mounting Instruction Rackmount-Kit 455-8G

Using the Rackmount-Kit 455-8G, up to 4 devices of the device size 103x143x42mm (Dualhead Devices) can be mounted into a 19“-Server Rack. The Rackmount Kit requires 1U Rackspace. Blindplates (in the list of parts delivered) allow to cover unused device positions.

Rackmount-Kit 455-8G – List of parts delivered:



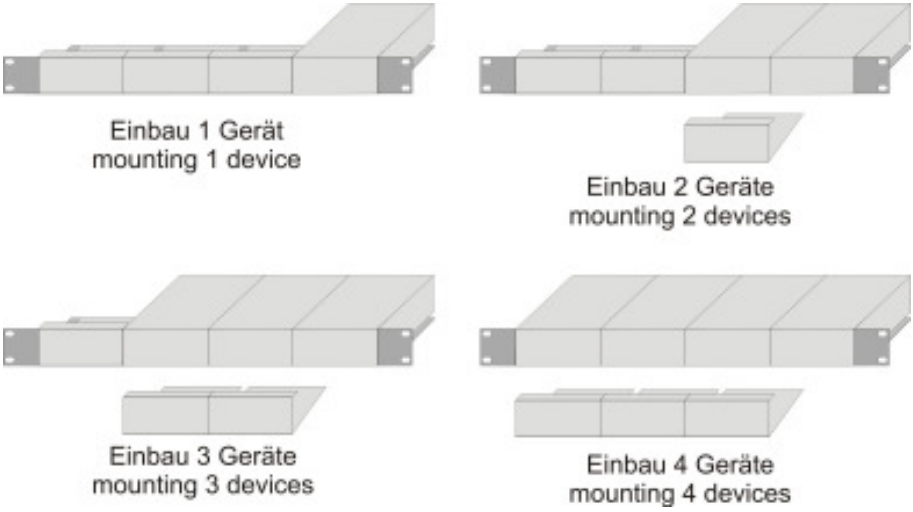
Mounting instruction:

- Align the holes on the base plate with the vacant screw holes on the base of the device.
- Fasten the base of the unit to the plate of the mounting kit

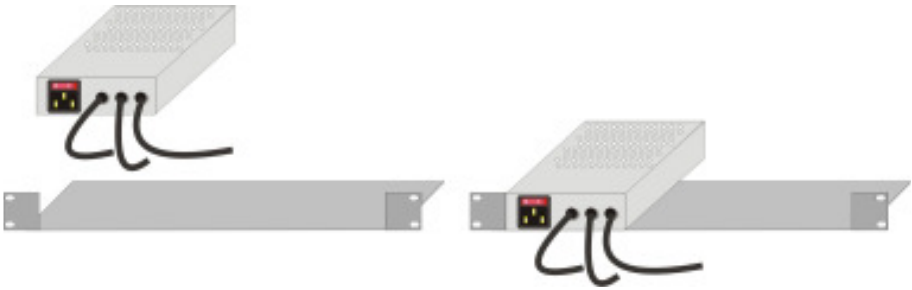
Only use the supplied, short screws, to prevent damages on the PCB’s

- Close the remaining gaps with blanking plates.

The Rackmount-Kit 455-8G allows, to mount a different count of devices (1…4 pieces):



In the mostleft position you can mount a rack mountable p.s.u. type 455-PS instead of a regular device. This p.s.u. is capable to power up to three devices.



Appendix C: Devices with serial/AUDIO Option

The Audio/Serial Option consists of daughter boards which allow bi-directional stereo audio and a full-duplex serial data link to be sent across the regular interconnection cable in addition to keyboard, mouse and VGA/DVI video. • To set up your video, keyboard, mouse follow the instructions in the user guide. • To set up the extender's audio and serial link, please follow all of the instructions detailed in this addendum. If you have any questions, contact Technical Support.

Technical Data

Serial link:

Serial speed :	Any up to a maximum of 19,200 Baud
Serial Data Format:	Format Independent
Flow Control:	RTS, CTS, DTR, DSR are sent across link

AUDIO link:

Description:	Bi-directional stereo audio link
Transmission Method:	Digitised virtually CD quality audio (16-bit, 38.4KHz)
Signal Levels:	Line-Level (5 Volts Pk-Pk maximum)
Input Impedance:	47K
Local Unit Connectors:	2 x 3.5mm stereo jack socket (Line In & Line Out)
Remote Unit Connectors:	2 x 3.5mm stereo jack socket (Line/Mic In & Line Out)
Microphone Support:	A microphone may be connected to the Remote Unit. A Pullup resistor provides bias for condenser microphone. Option to set microphone amplification to +17dB

Serial Interface - Set Up and Operation

No setting up or user adjustments are required. Please note that on the dual access model, the serial link is always active Please bear in mind that the Remote Unit's serial port is wired as DTE (i.e. the same as that on a PC). To connect a serial printer (or other DTE rather than DCE device) to the Remote Unit, you will need a Null-Modem (crossover) cable between the Remote Unit and the printer. A serial Touch-screen may be plugged directly into the Remote Unit.

APPENDIX C: DEVICES WITH SERIAL/AUDIO OPTION

Serial Interface – Handling Multiple Serial Devices

The extender's serial interface transmits/receives six signals (3 signals in each direction). Normally four of these signals are used for hardware handshaking (in addition to TX & RX). However, because each handshaking line can support signals up to 19,200 Baud it is possible to configure the serial interface to handle up to three simple 2-wire (Tx/Rx only) serial links. To do this you will need to construct a custom breakout cable. Please contact technical support for further information. Select Xon/Xoff software flow control on the printer and PC.

Audio Interface - Set Up and Operation

The audio interface is line-level and is designed to take the output from a sound card (or other line-level) source and be connected to a set of powered speakers at the other end of the link. Stereo audio may be transmitted either way across the link (simultaneously). No set up is required unless a microphone is connected to the remote unit. Connect up the extender as follows:

- Take the line-level output from your sound card (green connector) and connect to 'Line In' on the extender.
- A set of powered speakers may be connected directly to 'Line Out' at the opposite end of the link.

Audio Interface – Using a Microphone

A microphone may be plugged into the 'Line In' connector on the Remote Unit. There are two ways of setting up a microphone:

- The Local Unit's 'Line Out' connection should normally be wired to the microphone input (Red) on your sound card. The sound card should then be set up to provide additional amplification (+20dB). This is the preferred connection method.
- Alternatively, the Remote Unit itself can provide microphone amplification. To set this, open up the Remote Unit and locate the jumper labelled 'MIC' on the daughterboard. Connect this jumper across the pins. The Local Unit's 'Line Out' connection should then be wired to 'Line In' (Blue) on your sound card.

If your microphone is already amplified, follow the second method but DO NOT install the amplification jumper in the Remote Unit.

Appendix D: Calling Technical Support

If you determine that your DDXI - DVI KVM Extender is malfunctioning, ***do not attempt to alter or repair it***. It contains no user-serviceable parts. Contact Technical Support at.

Before you do, make a record of the history of the problem. We will be able to provide more efficient and accurate assistance if you have a complete description, including:

- The firmware-revision level printed on the bottom of the Extender (very important, especially for keyboard and mouse problems); The DVXI/XV - DVI KVM extender's firmware revision level:

  Version Number Format:
  Board: ***xxLO/RE Myyy Pzzz Auuu Gvvvvvv***
  Transceiver: ***C/M/S xx Pyy Mzz***
  Keyboard/Mouse: ***P/U xx Vyyy***

- The nature and duration of the problem.
- When the problem occurs.
- The components involved in the problem—that is, what type of computers, what type of keyboard, brand of mouse, make and model of monitor, type and make of cable, etc.
- Any particular application that, when used, appears to create the problem or make it worse.
- The results of any testing you've already done.

To solve some problems, it might be necessary to upgrade the Extender's firmware. If this turns out to be the case for your difficulty, our Technical Support technicians will arrange for you to receive the new firmware and will tell you how to install it.

Shipping and Packaging

If you need to transport or ship your DVXI/XV - DVI KVM Extender:

- Package it carefully. We recommend that you use the original container.
- If you are shipping it for repair, please include the Unit's external power supplies. If you are returning it, please include everything you received with it. Before you ship the Extender back to your dealer for repair or return, contact him to get a Return Authorization (RA) number.

Appendix E: List of supported USB devices

Although the USB connection's implementation allows all keyboards and Mice, we can not guarantee that all available keyboards/mice are running.

The implementation is constructed for "HID" devices. HID is a device class enabling inputs in a PC. Among others touch screen, graphic tablet, fingerprint sensor are HID devices.

Some devices install additional devices, e.g. to set parameters. Such devices are NOT supported by our extenders. Please remark additionally that installing more than two devices is not possible even if you use a USB hub.

The following devices are tested and have been found correct:

Keyboards

-

Mice

-

Appendix F: Specifications

Power Supply

Voltage	90-240VAC-0.5A-47-63Hz/5VDC-2000 mA
Power required	Local Unit : max. 750mA Remote Unit : max. 750mA

Interface

(Depending on type of device)

Video source/Monitor	DVI-D up to 1920x1200@60Hz
Keyboard	PS2 or USB (depending on model)
Mouse	PS2 or USB (depending on model) 2-/3-button and wheel mouse
Serial	Any up to a maximum of 19,200 Baud RTS, CTS, DTR, DSR are sent across link
Audio	Bi-directional stereo audio link

Maximum Length of Interconnection Cable

Singlemode 9 µm	2.000m (6.550ft)
Multimode 50µm	400m (1.300ft)
Multimode 62.5µm	200m (650ft)

Type of Interconnection Cable

Singlemode 9 µm	Two fibres 9µm. E.g. I-V (ZN)H 2E9 (In house patch cable) or I-V(ZN)HH 2E9 (In house Breakout cable) or I/AD(ZN)H 4E9 (in house OR outdoor Breakout cable, stress resistant) or A/DQ(ZN)B2Y 4G9 (outdoor cable, stress resistant with protection against animal biting) All notations acc. VDE specification.
Multimode 50µm	Two fibres 50µm, E.g. I-V(ZN)H 2G50 (In house patch cable) or I/AD(ZN)H 4G50 (in house OR outdoor Breakout cable, stress resistant) All notations acc. VDE specification.
Multimode 62.5µm	Two fibres 62.5µm. E.g. I-V(ZN)HH 2G62,5 (In house Breakout cable) or A/DQ(ZN)B2Y 4G62,5 (outdoor cable, stress resistant with protection against animal biting) All notations acc. VDE specification.
Plug type	For all cables: LC

Size and Shipping Weight

DVXi/XV Singlehead	103 x 143 x 29mm (4”x5.6”x1.1”) (2 devices) Weight: 0,6kg (1.3lb) each
Shipping box	210x140x165mm (8.3”x5.5”x6.5”) Weight: 1,6 kg (3.5lb)
DVXi/XV Dualhead/Audio	103 x 143 x 42mm (4”x5.6”x1.1”) (2 Geräte) Weight Local/Remote Unit: 0,6kg (1.3lb)
Shipping box	460x250x120mm (18.1”x9,8”x4,7”) Weight: 1,6 kg (3.5lb)

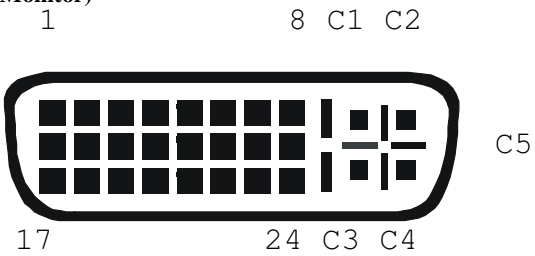
Environmental

Operating Temperature	41 to 113°F (5 to 45 °C)
Storage Temperature	-13 to 140°F (-25 to 60 °C)
Relative Humidity	max. 80% non-condensing

Appendix G: Connectors

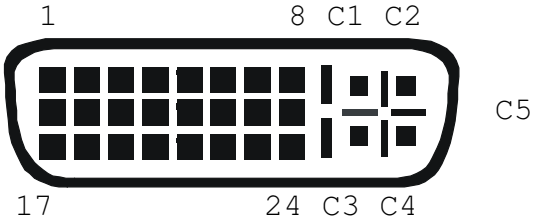
DVXi/XV KVM-Extender Connector Pinouts

DVI-I female connector (Output connector for ALL devices and Input connector Dualhead devices 2nd Monitor)



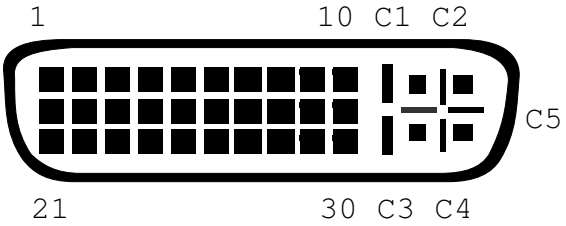
Pin	*Signal*	*Pin*	*Signal*	*Pin*	*Signal*
1	T.M.D.S data 2-	9	T.M.D.S data 1-	17	T.M.D.S data 0-
2	T.M.D.S data 2+	10	T.M.D.S data 1+	18	T.M.D.S data 0+
3	T.M.D.S data 2 GND	11	T.M.D.S data 1 GND	19	T.M.D.S data 0 GND
4	n.c.	12	n.c.	20	n.c.
5	n.c.	13	n.c.	21	n.c.
6	DDC Input (SCL)	14	+5V high impedance	22	T.M.D.S clock GND
7	DDC Output(SDA)	15	GND	23	T.M.D.S clock +
8	Internal use.	16	Hot Plug recognition	24	T.M.D.S clock -
C1	Internal use.			C3	Internal use.
C2	n.c.	C5	GND	C4	Internal use.

DVI-I female connector (Input connector for ALL Singlehead devices and Input connector Dualhead devices 1st Monitor)



Pin	*Signal*	*Pin*	*Signal*	*Pin*	*Signal*
1	T.M.D.S data 2-	9	T.M.D.S data 1-	17	T.M.D.S data 0-
2	T.M.D.S data 2+	10	T.M.D.S data 1+	18	T.M.D.S data 0+
3	T.M.D.S data 2 GND	11	T.M.D.S data 1 GND	19	T.M.D.S data 0 GND
4	PS2-KBD CLK	12	PS2-MOUSE CLK	20	PS2-MOUSE VCC-IN +5V (not required)
5	PS2-KBD DATA	13	PS”-MOUSE-DATA	21	PS2-KBD VCC-IN +5V (always required)
6	DDC Input (SCL)	14	+5V In for DDC	22	T.M.D.S clock GND
7	DDC Output(SDA)	15	GND	23	T.M.D.S clock +
8	Analog VSYNC	16	Hot Plug recognition	24	T.M.D.S clock -
C1	n.c.			C3	n.c.
C2	n.c.	C5	GND	C4	n.c.

Special female alike DVI-I (DVI cable set+ Audio/Serial)



Pin	*Signal*	*Pin*	*Signal*	*Pin*	*Signal*
1	T.M.D.S data 2-	11	T.M.D.S data 1+	21	T.M.D.S data 0+
2	T.M.D.S data 2+	12	T.M.D.S data 1-	22	T.M.D.S data 0-
3	T.M.D.S data 2 SHLD	13	T.M.D.S data 1 SHLD	23	T.M.D.S data 0 SHLD
4	GND	14	T.M.D.S clock +	24	HP DET
5	Sense in	15	T.M.D.S clock -		GND
6	Sense Out	16	RS232 RTS		DDC data
7	T.M.D.S clock	17	RS232 CTS		DDC clock
8	n.c.	18	GND		+5 VDC
9	RS232 RX	19	n.c.		RS232 DSR
10	RS232 TX	20	n.c.		RS232 DTR
C1	Audio Line In Left.			C3	Audio Line Out Left.
C2	Audio Line In Right	C5	Audio SHLD	C4	Audio Line Out Right

Combined Keyboard/Mouse connector (output connector Local Unit)

Pin	
1	KBD-DATA
2	MOUSE-DATA
3	KBD/MOUSE-GND
4	VCC (+5V)
5	KBD-CLK
6	MOUSE-CLK

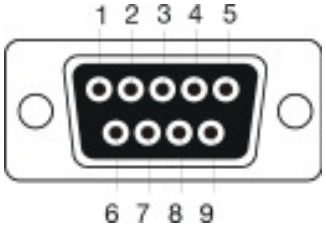
Keyboard/Mouse connector (output connector Remote Unit)

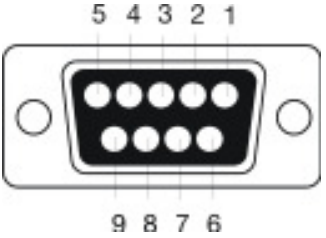
Pin	*Keyboard*	*Pin*	*Mouse*
1	KBD-DATA	1	MOUSE-DATA
2		2	
3	KBD-GND	3	MOUSE-GND
4	VCC (+5V)	4	VCC (+5V)
5	KBD-CLK	5	MOUSE-CLK
6		6	

Keyboard/Mouse Adapter to connect Keyboard/Mouse to Local Unit

Pin	*Connector (device)*	*Pin*	*Keyboard*	*Pin*	*Mouse*
1	KBD-DATA	1	KBD-DATA	2	
2	MOUSE-DATA	2		1	MOUSE-DATA
3	KBD-GND	3	KBD -GND	3	MOUSE-GND
4	VCC (+5V)	4	VCC (+5V)	4	VCC (+5V)
5	KBD-CLK	5	KBD -CLK	6	
6	MOUSE-CLK	6		5	MOUSE-CLK

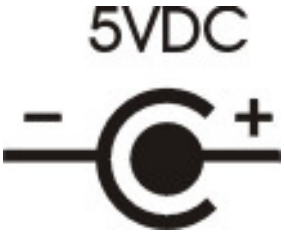
Serial Interface





Pin	*Signal*	*Pin*	*Signal*
1	n.c.	1	n.c.
2	RxD	2	RxD
3	TxD	3	TxD
4	DTR	4	DTR
5	GND	5	GND
6	DSR	6	DSR
7	RTS	7	RTS
8	CTS	8	CTS
9	n.c	9	n.c

Power



Pin	*Signal*
inner	+5V
outer	GND

NOTES